

Preliminary Air Monitoring Summary

CR-251 Event

Prepared On Behalf Of: Colonial Pipeline

Prepared By:

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CTEH Project #108641

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Introduction

On October 31, 2016, the Center for Toxicology and Environmental Health (CTEH®) was contacted by Colonial Pipeline to initiate air monitoring for gasoline, its constituents, and combustion products. This submittal summarizes real-time air monitoring data recorded by CTEH® personnel between 11/02/2016 06:00 CDT and 11/03/2016 06:00 CDT in accordance with the CTEH® Air Sampling and Analysis Plan. Please note that all real-time data in this report has not undergone full QA/QC (quality assurance/quality control) analysis. It has been provided expeditiously to on-site contractors for informational purposes only.

Manually-Logged Real-Time Air Monitoring

Real-time air monitoring was conducted to evaluate the potential airborne presence of gasoline-associated constituents, if any, during response operations. All instrumentation was calibrated at least once per day or per manufacturer's recommendations. Target analytes were measured as total volatile organic compounds (VOCs), benzene, formaldehyde, carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), particulate matter (PM_{2.5}), and atmospheric flammability as percentage of the lower explosive limit (%LEL) using hand-held instruments such as RAESystems® MultiRAE Pro/Plus as well as Gastec® colorimetric detection tubes.

Table 1 summarizes the manually-logged real-time air monitoring readings. Maps depicting the site and locations of recorded readings are available in **Attachment 1**.

Table 1: Summary of Manually-Logged Real-Time Air Monitoring Results¹
November 2, 2016 06:00 CDT – November 3, 2016 06:00 CDT

Location	Analyte	Number of Readings	Number of Detections	Concentration Range ^{2,3}	Health Based Action Level
Community	Carbon Monoxide (CO)	76	4	1 – 3 ppm	12 ppm
	Formaldehyde	13	0	< 0.05 ppm	1 ppm
	%LEL	1	0	< 1 %	3 ppm
	Nitrogen Dioxide (NO ₂)	31	1	0.2 ppm	1 ppm
	PM _{2.5}	78	78	0.018 – 1.04 mg/m ³	0.138 mg/m ³
	Sulfur Dioxide (SO ₂)	51	0	< 0.1 ppm	0.3 ppm
	VOCs	175	0	< 0.1 ppm	100 ppm
Worker Exposure	Benzene	13	4	0.2 – 0.35 ppm	0.5 ppm
	Carbon Monoxide (CO)	24	11	2 – 7 ppm	25 ppm
	Formaldehyde	1	0	< 0.05 ppm	0.3 ppm
	%LEL	44	0	< 1 %	3 ppm
	Nitrogen Dioxide (NO ₂)	31	0	< 0.1 ppm	0.2 ppm
	PM _{2.5}	53	53	0.031 – 2.69 mg/m ³	0.351 mg/m ³
	Sulfur Dioxide (SO ₂)	32	0	< 0.1 ppm	0.25 ppm
	VOCs	58	34	0.1 – 257 ppm	300 ppm

¹Please Note: The data displayed in the above table has not undergone complete QC analysis and is presented in a preliminary format.

²Maximum detections preceded by the "<" symbol are considered non-detections below the instrument limit of detection (LOD) value to the right.

³Numbers are the raw values, no correction factors have been applied.

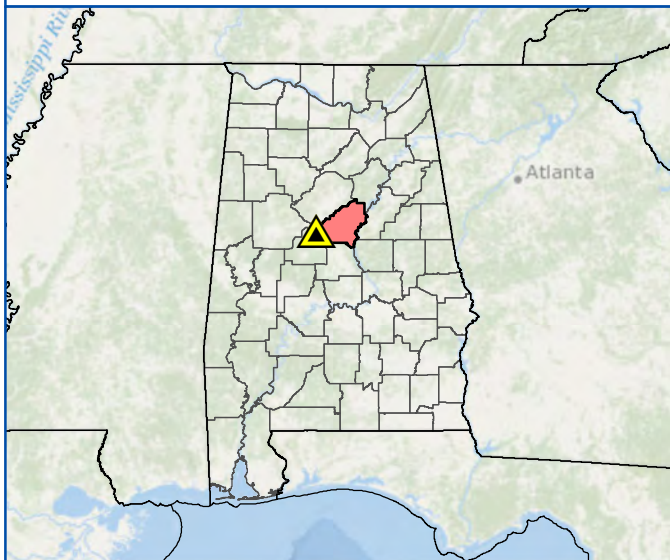
Weather Conditions

Weather conditions were acquired from the National Weather Service meteorological station located at the Bessemer Airport (KEY). Wind direction for the report period was predominantly from the ESE at 0 – 9.2 mph. A wind rose depicting wind speed and direction is available in **Attachment 2**.

Table 3: Weather Conditions for Report Period

Observation	Range	Average
Relative Humidity	49 - 93 %	69 %
Temperature	62.1 – 81.0 °F	69.5 °F
Pressure	30.25 – 30.38 inches Hg	30.31 inches Hg

Attachment 1: Site Maps





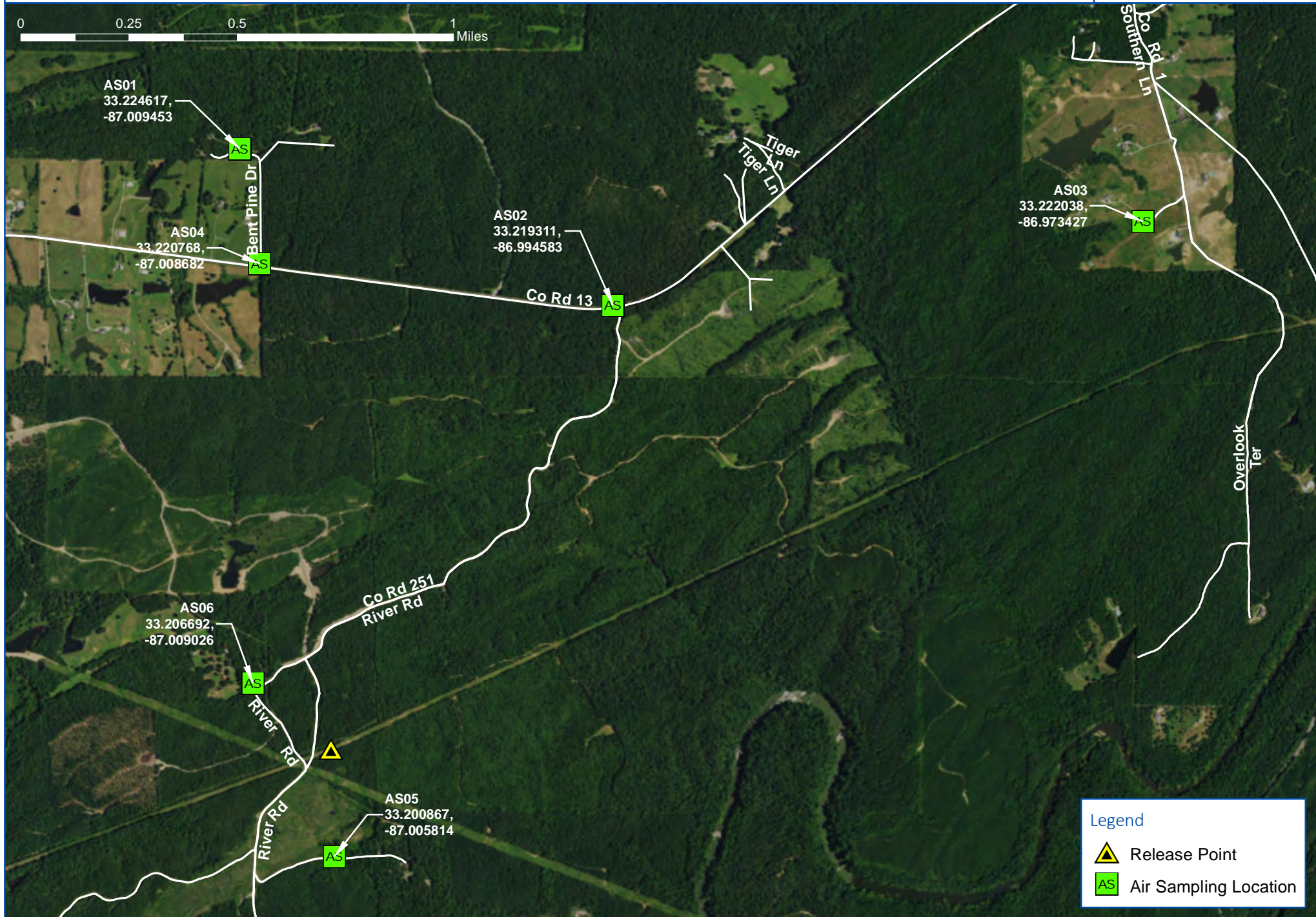
Analytical Air Sampling Station

CR-251 Event



Project: 108641
Client: Colonial
City: Helena, AL
County: Shelby



0 0.25 0.5 1 Miles



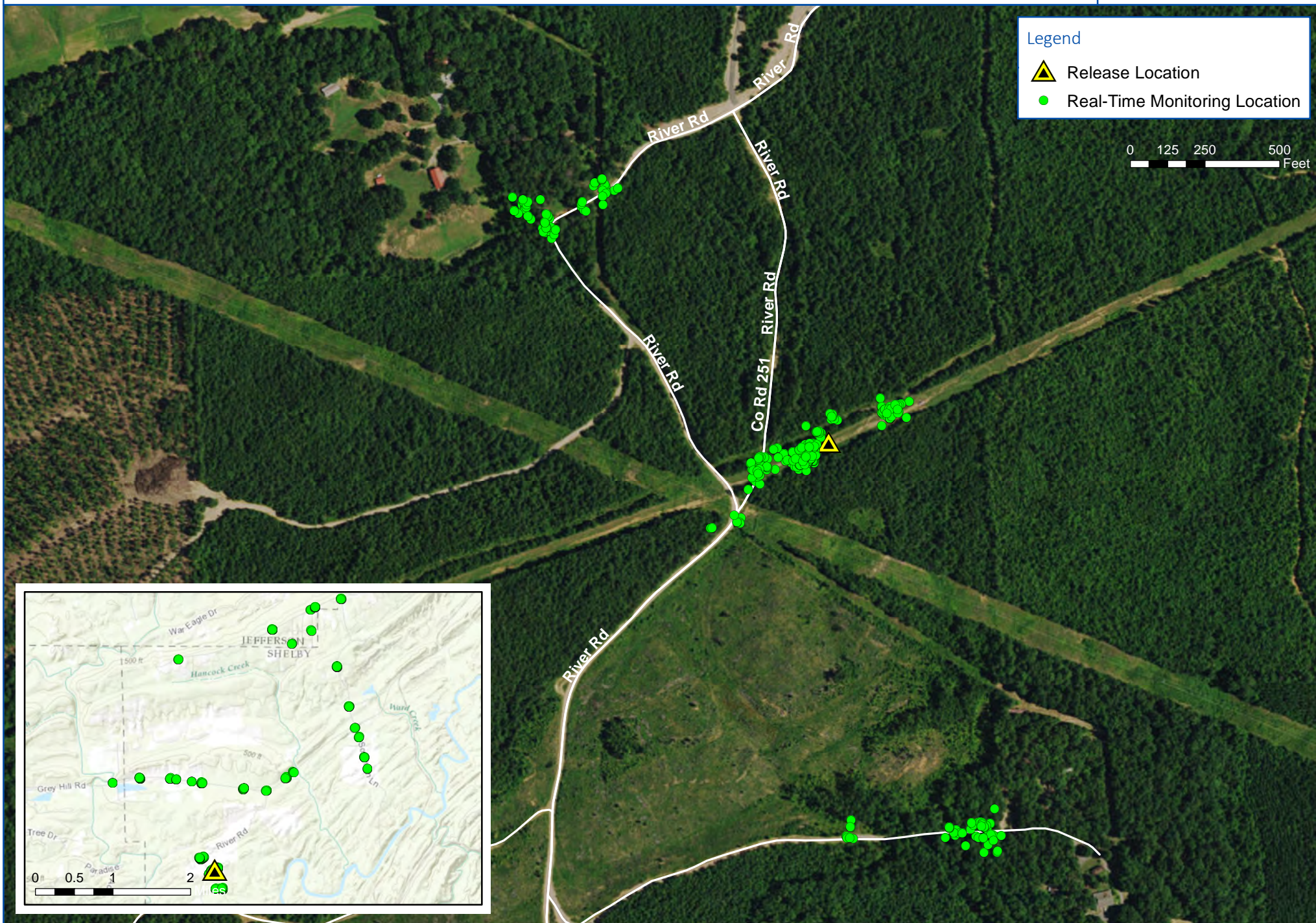
Legend

- Release Point
- Air Sampling Location

Legend

-  Release Location
-  Real-Time Monitoring Location

0 125 250 500 Feet



Legend

Release Location

VOC Concentration (ppm)

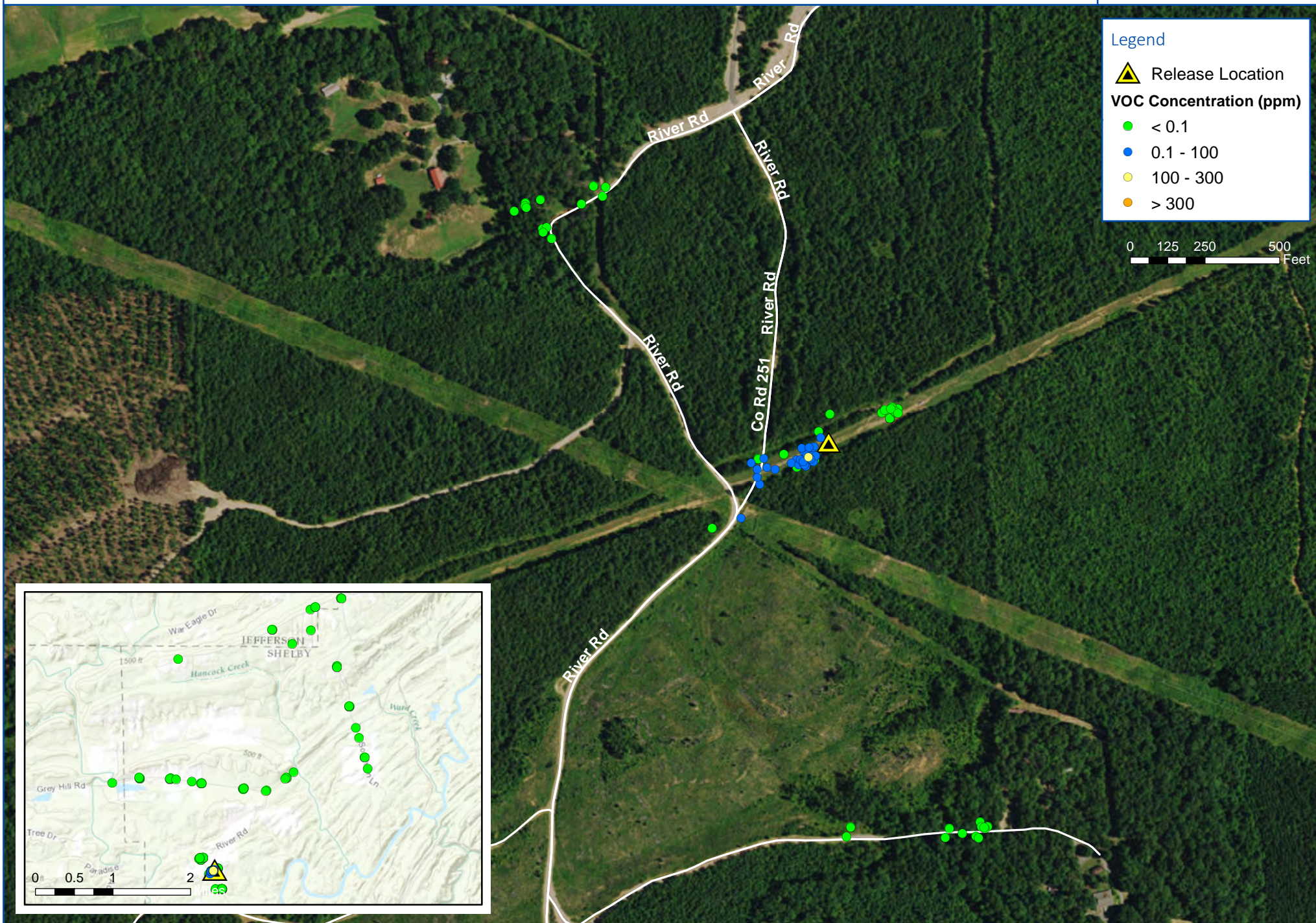
< 0.1

0.1 - 100

100 - 300

> 300

0 125 250 500 Feet






Manually-Logged Real-Time Benzene Concentrations

CR-251 Event November 2, 2016 6:00 - November 3, 2016 06:00





Project: 108641
Client: Colonial
City: Helena, AL
County: Shelby


Legend


 Release Location

Benzene Concentration (ppm)

 < 0.05

 0.05 - 0.5

 0.6 - 2.5

 > 2.5

0 125 250 500 Feet

0 0.5 1 2 Miles

Legend

Release Location

CO Concentration (ppm)

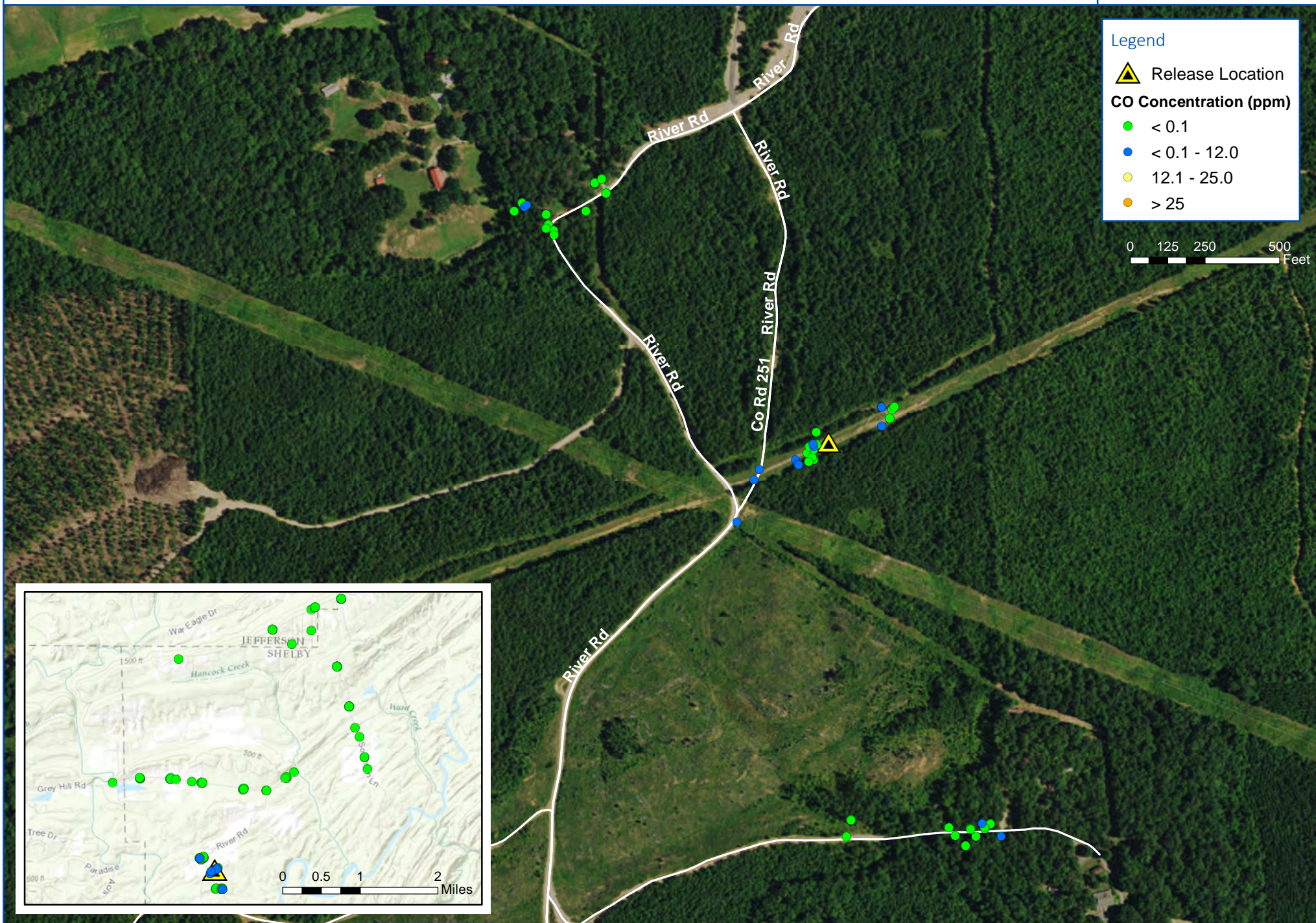
< 0.1

< 0.1 - 12.0

12.1 - 25.0

> 25

0 125 250 500 Feet



Legend

Release Location

NO₂ Concentration (ppm)

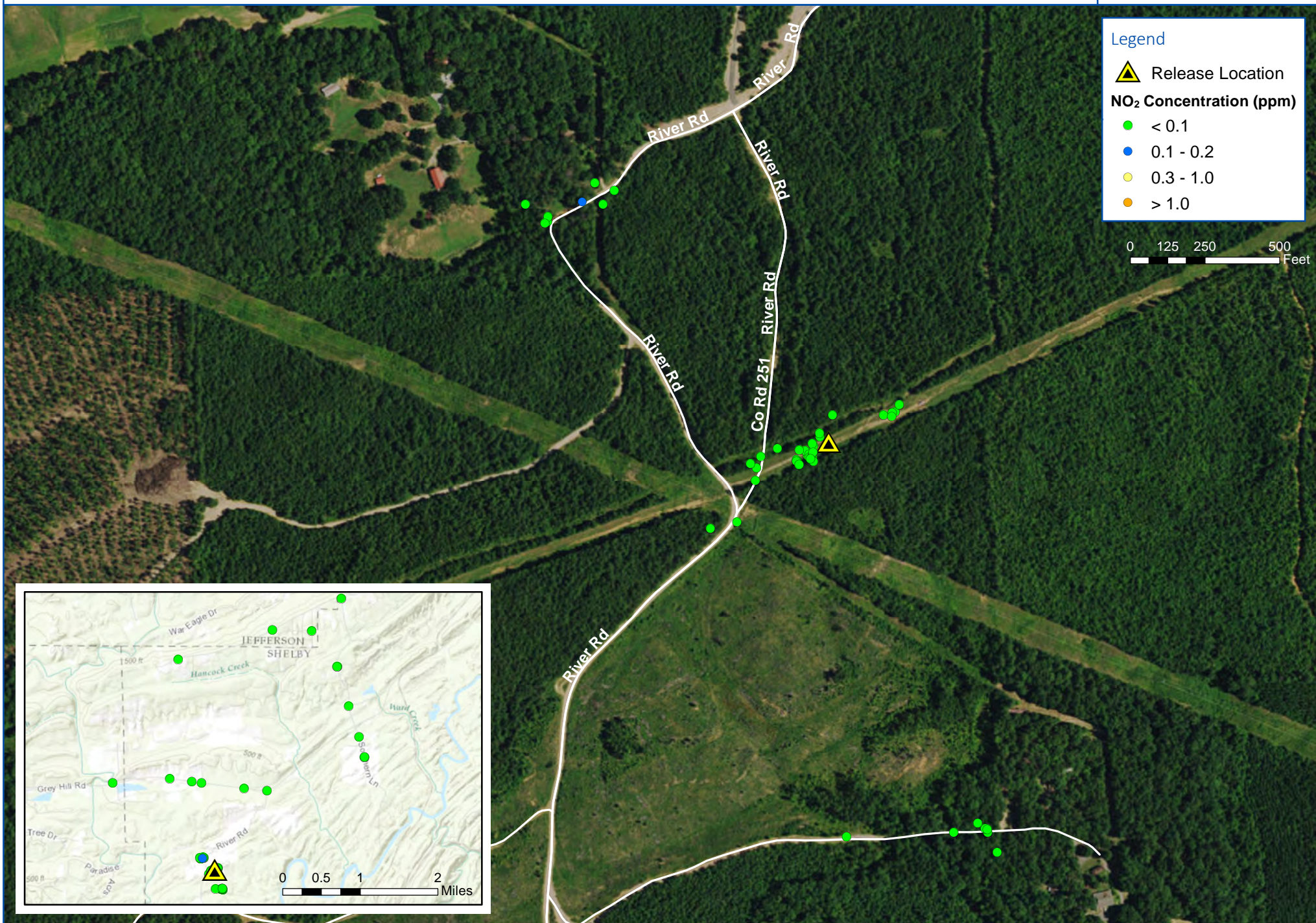
< 0.1

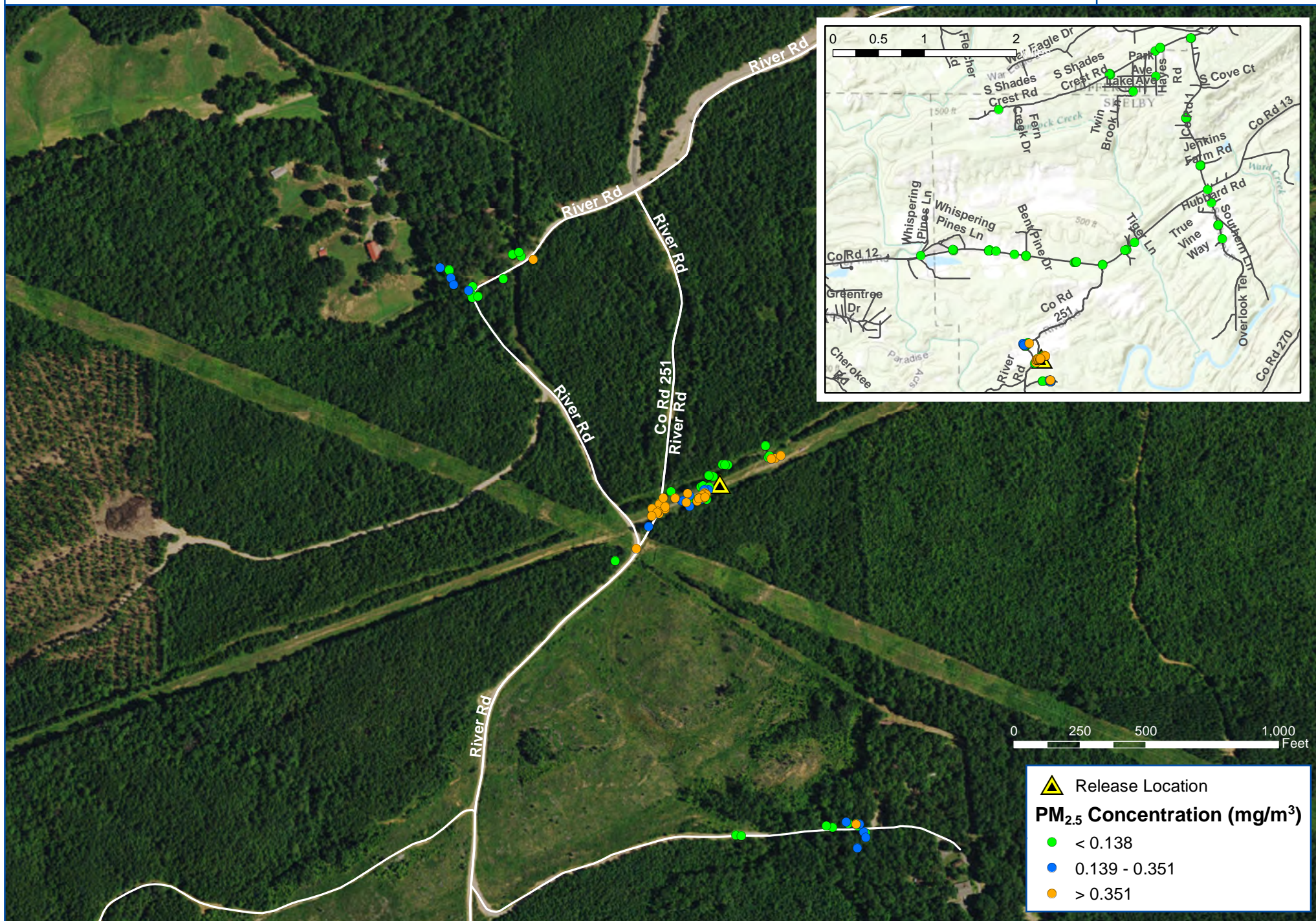
0.1 - 0.2

0.3 - 1.0

> 1.0

0 125 250 500 Feet





Attachment 2: Weather Conditions

Weather Station: KEKY 2016-11-02 to 2016-11-03

